CLAIMS

What is claimed is:

1. A method for coordinating multipoint group members in a multicast network environment, comprising:

transmitting control directives between group members across a shared end-to-end multicast tree.

2. A method as recited in claim 1, further comprising

aggregating the forwarding of said control directives.

3. A method as recited in claim 2,

wherein multiple requests for the same information from different nodes in the tree are assembled in a hop node in the tree, and are forwarded combined.

4. A method as recited in claim 3, wherein said hop node comprises a node on a path to a target.

5. A method as recited in claim 3,

wherein if said hop node receives the same control directives from different nodes, said hop node aggregates them into one control directive, and checks if a response to said control directives can be satisfied locally by said hop node by polling its own state and the state of neighboring nodes; and

wherein if a response to said control directives cannot be satisfied locally by aid hop node said aggregated control directive is self-routed up or down in the tree toward the target nodes.

6. A method as recited in claim 1,

wherein if a target node is in the subtree of a node, the control directive is routed downward the subtree branch where the target resides; and

wherein if a target node is not in the subtree of a node, the control directive is sent upward to its parent node.

7. A method as recited in claim 1, further comprising

assigning recursively and top-down unique prefix labels to each node joining the tree;

wherein a child node label contains as prefix the label of its parent.

8. A method as recited in claim 1, wherein said tree comprises:

a holder node, said holder node operating on a resource, said holder node being a transmission source, said holder node hosting a floor holder, said holder node being permitted to access a resource at any time;

a control node, said control node hosting a floor controller, said floor controller controlling access and operation for a specific resource, said control node configured for being addressed by other nodes asking for a floor; and

a target node, said target node configured for receiving updates of resource operation by a floor holder;

wherein a floor comprises a temporary privilege to work with a resource.

9. A method as recited in claim 1, wherein said tree corresponds to a single shared acknowledgment tree for concurrent multicasting.

10. method for coordinating multipoint group members in a multicast network environment, comprising:

transmitting control directives between group members across a shared end-to-end multicast tree;

wherein if a target node is in the subtree of a node, the control directive is routed downward the subtree branch where the target resides; and

wherein if a target node is not in the subtree of a node, the control directive is sent upward to its parent node.

11. A method as recited in claim 10, further comprising

aggregating the forwarding of said control directives.

12. A method as recited in claim 11,

wherein multiple requests for the same information from different nodes in the tree are assembled in a hop node in the tree, and are forwarded combined.

13. A method as recited in claim 12, wherein said hop node comprises a node on a path to a target.

14. A method as recited in claim 12,

wherein if said hop node receives the same control directives from different nodes, said hop node aggregates them into one control directive, and checks if a response to said control directives can be satisfied locally by said hop node by polling its own state and the state of neighboring nodes; and

wherein if a response to said control directives cannot be satisfied locally by aid hop node said aggregated control directive is self-routed up or down in the tree toward the target nodes.

15. A method as recited in claim 10, further comprising

assigning recursively and top-down unique prefix labels to each node joining the tree;

wherein a child node label contains as prefix the label of its parent.

16. A method as recited in claim 10, wherein said tree comprises:

a holder node, said holder node operating on a resource, said holder node being a transmission source, said holder node hosting a floor holder, said holder node being permitted to access a resource at any time;

a control node, said control node hosting a floor controller, said floor controller controlling access and operation for a specific resource, said control node configured for being addressed by other nodes asking for a floor; and

a target node, said target node configured for receiving updates of resource operation by a floor holder;

wherein a floor comprises a temporary privilege to work with a resource.

17. A method as recited in claim 10, wherein said tree corresponds to a single shared acknowledgment tree for concurrent multicasting.

18. A method for coordinating multipoint group members in a multicast network environment, comprising:

transmitting control directives between group members across a shared end-to-end multicast tree; and

assigning recursively and top-down unique prefix labels to each node joining the tree;

wherein a child node label contains as prefix the label of its parent.

19. A method as recited in claim 18, further comprising

aggregating the forwarding of said control directives.

20. A method as recited in claim 19,

wherein multiple requests for the same information from different nodes in the tree are assembled in a hop node in the tree, and are forwarded combined.

21. A method as recited in claim 20, wherein said hop node comprises a node on a path to a target.

22. A method as recited in claim 20,

wherein if said hop node receives the same control directives from different nodes, said hop node aggregates them into one control directive, and checks if a response to said control directives can be satisfied locally by said hop node by polling its own state and the state of neighboring nodes; and

wherein if a response to said control directives cannot be satisfied locally by aid hop node said aggregated control directive is self-routed up or down in the tree toward the target nodes.

23. A method as recited in claim 18,

wherein if a target node is in the subtree of a node, the control directive is routed downward the subtree branch where the target resides; and

wherein if a target node is not in the subtree of a node, the control directive is sent upward to its parent node.

24. A method as recited in claim 18, wherein said tree comprises:

a holder node, said holder node operating on a resource, said holder node being a transmission source, said holder node hosting a floor holder, said holder node being permitted to access a resource at any time;

a control node, said control node hosting a floor controller, said floor controller controlling access and operation for a specific resource, said control node configured for being addressed by other nodes asking for a floor; and

a target node, said target node configured for receiving updates of resource operation by a floor holder;

wherein a floor comprises a temporary privilege to work with a resource.

25. A method as recited in claim 18, wherein said tree corresponds to a single shared acknowledgment tree for concurrent multicasting.

26. A method for coordinating multipoint group members in a multicast network environment, comprising:

transmitting control directives between group members across a shared end-to-end multicast tree;

wherein said tree comprises,

a holder node, said holder node operating on a resource, said holder node being a transmission source, said holder node hosting a floor holder, said holder node being permitted to access a resource at any time,

a control node, said control node hosting a floor controller, said floor controller controlling access and operation for a specific resource, said control node configured for being addressed by other nodes asking for a floor, and

a target node, said target node configured for receiving updates of resource operation by a floor holder,

wherein a floor comprises a temporary privilege to work with a resource.

27. A method as recited in claim 26, further comprising

aggregating the forwarding of said control directives.

28. A method as recited in claim 27,

wherein multiple requests for the same information from different nodes in the tree are assembled in a hop node in the tree, and are forwarded combined.

29. A method as recited in claim 28, wherein said hop node comprises a node on a path to a target.

30. A method as recited in claim 28,

wherein if said hop node receives the same control directives from different nodes, said hop node aggregates them into one control directive, and checks if a response to said control directives can be satisfied locally by said hop node by polling its own state and the state of neighboring nodes; and

wherein if a response to said control directives cannot be satisfied locally by aid hop node said aggregated control directive is self-routed up or down in the tree toward the target nodes.

31. A method as recited in claim 26,

wherein if a target node is in the subtree of a node, the control directive is routed downward the subtree branch where the target resides; and

wherein if a target node is not in the subtree of a node, the control directive is sent upward to its parent node.

32. A method as recited in claim 26, further comprising

assigning recursively and top-down unique prefix labels to each node joining the tree;

wherein a child node label contains as prefix the label of its parent.

33. A method as recited in claim 26, wherein said tree corresponds to a single shared acknowledgment tree for concurrent multicasting.

34. A method for coordinating multipoint group members in a multicast network environment, comprising:

transmitting control directives between group members across a shared end-to-end multicast tree;

wherein said tree corresponds to a single shared acknowledgment tree for concurrent multicasting.

35. A method as recited in claim 34, further comprising aggregating the forwarding of said control directives.

36. A method as recited in claim 35,

wherein multiple requests for the same information from different nodes in the tree are assembled in a hop node in the tree, and are forwarded combined.

37. A method as recited in claim 36, wherein said hop node comprises a node on a path to a target.

38. A method as recited in claim 36,

wherein if said hop node receives the same control directives from different nodes, said hop node aggregates them into one control directive, and checks if a response to said control directives can be satisfied locally by said hop node by polling its own state and the state of neighboring nodes; and

wherein if a response to said control directives cannot be satisfied locally by aid hop node said aggregated control directive is self-routed up or down in the tree toward the target nodes.

39. A method as recited in claim 34,

wherein if a target node is in the subtree of a node, the control directive is routed downward the subtree branch where the target resides; and

wherein if a target node is not in the subtree of a node, the control directive is sent upward to its parent node.

40. A method as recited in claim 34, further comprising

assigning recursively and top-down unique prefix labels to each node joining the tree;

wherein a child node label contains as prefix the label of its parent.

41. A method as recited in claim 34, wherein said tree comprises:

a holder node, said holder node operating on a resource, said holder node being a transmission source, said holder node hosting a floor holder, said holder node being permitted to access a resource at any time;

a control node, said control node hosting a floor controller, said floor controller controlling access and operation for a specific resource, said control node configured for being addressed by other nodes asking for a floor; and

a target node, said target node configured for receiving updates of resource operation by a floor holder;

wherein a floor comprises a temporary privilege to work with a resource.